

Cross bows

THE CROSS-BOW

By

CORNELIUS STEVENSON

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THE CROSS-BOW.

BY CORNELIUS STEVENSON.

The cross-bow, called in Latin *arcus balistarius* or *balista manualis*, and in French *arbalète*, was so named to distinguish it from certain larger machines called *balistæ* and *catapultæ*, which were used for battering the walls of towns with stones and lancing darts or projectiles of immense size.

It is an offensive weapon and is composed of a stock with a steel bow fixed in the extremity, and with a groove to receive the bolt. The cord is retained in its place by a nut, which is a circular disk of bone or ivory provided with two notches, one to receive the cord when strung, the other serving as a catch for the trigger. Back of this nut is a spring, by lightly pressing which the bolt is held in its place, to prevent it from falling when the cross-bow is inclined. Two clamps on each side of the stock hold the bow firmly in its place and prevent it from jarring loose. The stock is usually made of yew, or of the wood of the pear tree; but sometimes of ebony, and then it is frequently inlaid with ivory, and the bow damascened, and ornamented with tufts of silk.

The use of weapons made upon the principle of the cross-bow seems to be common to the people of all countries; but its origin can never be satisfactorily ascertained. Some writers say it is of Sicilian origin, while others ascribe its invention to the Cretans. M. Rhodios thinks it existed among the Greeks, and that they called it *gastraphetes*, because the cross-bowman rested it on the pit of the stomach.

According to Francis Grose, Verstegan attributes its introduction into England to the Saxons at the time of Hengist and Horsa, A. D. 457, but gives no authority in support of that supposition. In a print representing their landing, one of them

is shown carrying the cross-bow on his shoulder; and so likewise other figures in the picture. The cross-bow is mentioned by William of Tyre in the year 1098, about the time of the first crusade; and a manuscript in the *Bibliothèque Nationale*, at Paris, of the end of the tenth century, shows, in one of its illustrations two cross-bowmen discharging their weapons against the ramparts of the town of Tyre. On the other hand, the Bayeux Tapestry, of the end of the eleventh century, shows both the Normans and Saxons armed with long bows, and it would appear that neither army used the cross-bow at that time; although some writers say that William the Conqueror employed cross-bowmen in his army at the battle of Hastings. Sir Samuel Meyrick * is clearly of the opinion that the cross-bow was in use among the Normans; for he says that "in Domesday Book mention is made of Odo the *arbalester*, as a tenant in capite of the King's lands in Yorkshire. The name shows him to have been a Norman, and this instance is sufficient to prove the introduction of the weapon; though the smallness of the number used might occasion its not being represented in the Bayeux Tapestry." This writer also thinks that during the reign of Rufus it was used principally for hunting purposes; and Wace tells us that Henry, going the same day to New Forest, found the string of his cross-bow broken, and, taking it to a villain to be mended, saw an old woman there who told him he would be king.

The Abbé Suger, in his life of Louis VI, mentions the cross-bow as used in the beginning of the reign of that monarch, about 1108. But at the Council of Lateran, in 1139, Pope Innocent II forbade its use among Christian nations, as being "deathly and hateful to God;" but permitted it against infidels; and the prohibition was confirmed by Pope Innocent III. In spite of this interdict, however, Richard I, of England, armed a part of his army with the arbalist; and, as he was killed by a quarrel shot from one, while besieging the castle of Charlez, near Limoges, in Normandy, his death was considered as a judgment from heaven, inflicted upon him for his impiety. Philip Augustus also formed some bodies of cross-bowmen, both on foot and on horseback.

The Germans made very little use of missile-weapons, until

*Note at foot of page 15, Vol. I, of Meyrick's *Critical Inquiry into Armour*.

the invention of the cross-bow. It seems to have been introduced in Germany at quite an early period, as is evidenced by some frescoes in the cathedral of Brunswick, painted in the reign of Henry the Lion, who died in 1195; and by paintings done in the thirteenth century in the chapel of Saint John at Ghent. It is well-known that Boleslaus, Duke of Schweidnitz, introduced among his subjects the practice of shooting with the cross-bow in the year 1286; and a little later it appears at Nuremberg and Augsburg.

During the reign of James I, King of Aragon, in the thirteenth century, the cross-bow was so elaborate and expensive a weapon that the cross-bowman was regarded as the equal in rank of a knight, a distinction at that time of great importance; and it was enacted that "no knight's son who is not a knight or cross-bowman shall sit at table with knights or their ladies."

After the revival of this arm by Richard I, it was much used in England; and, in the list of forces raised by Edward II against the Scots in the year 1322, the cross-bowman made the second article in the enumeration of the different kinds of soldiers. In the reign of Henry V, of England, the cross-bows were made powerful enough to send the quarrels forty rods; for, in the *Dunstable Chronicle*, we read that "Henry V came near to the city of Roan by forty rods of length, within shotte of quarrell." Cross-bows were frequently used as weapons of defence and mounted on the tops of castles, behind the crenelles of turrets pierced to shoot through, and they were then called crenequins.

The cross-bow was also considered a royal weapon; and Gerard de la Warre, in the reign of Henry III, was appointed cross-bow bearer to that sovereign, and valuable manor lands granted to him, conditional upon his providing cross-bow strings, or materials for making them. Henry VII, however, towards the close of his reign, forbade its use, in order to encourage the more general use of the long bow. But there was a reservation in favor of the nobility; for by the statute 19 Hen. VII, c. 4, A. D. 1508: "No man shall shoot with a cross-bow with the King's license, except he be a lord, or have two hundred marks of land." So strong was the dislike of Henry VIII to this weapon, that, notwithstanding the statute of Henry VII, he caused another statute to be passed in the year 1515 prohibiting its use. These statutes do not, however, seem to have had the desired effect; for, in less than twenty years after, their use had become so

common that a new statute was deemed necessary, which imposed a penalty of twenty pounds on anybody that kept one in his house. Its gradual decline in England, however, may date from that period, and no cross-bowmen are to be seen in the paintings of the period representing the battles of Henry VIII. This may be owing to the more general use of gunpowder and the great improvement in the art of gunnery. The use of the cross-bow seems to have been somewhat revived in the reign of Queen Elizabeth, for we find that in the year 1572 the Queen, in a treaty with King Charles IX, of France, agreed to furnish six thousand men, armed partly with long bows and partly with cross-bows.

Independently of the mercenary cross-bowmen, composed for the most part of Genoese and Gascons, in the armies of France from the thirteenth century, a great number of the large towns of the northern provinces of that country possessed companies of cross-bowmen. In 1230, an Act of Parliament gave the title of Master of the *Arbalétriers* to Thibaut de Montléard. This office was considered of great importance and next in rank to that of Marshal of France, and in 1515 was united with that of Grand Master of Artillery. Charles V, in 1359, established for the defence of Paris a body of *arbalétriers* composed of two hundred men, and they elected each year four provosts from their fraternity, who each commanded fifty men. Each man received in time of peace "*deux vieux gros d'argent, ou la valeur*," a day, and double that sum when in active service, besides enjoying numerous privileges. This body grew in number in a short time; for, in 1375, we find it augmented by royal ordinance to eight hundred men; and their privileges seem to have grown in proportion. They were not bound to serve beyond the limits of their district, without the consent of the Provosts of Paris and the "*Prévôts des Marchants*"; although they frequently took the field when the necessities of the crown were pressing.

During the reign of Charles VII, the cross-bow became so popular that it almost superseded the long bow; and it was only abandoned as an arm of war under the reign of Francis I. At the battle of Marignan, in the year 1515, however, there were still two hundred *arbalétriers* on horseback, who formed the guard of Francis, and who rendered signal service. Père Daniel, the author of *Discipline Militaire*, says that at Bicoque there was only one *arbalétrier*, but so skilful was he, that "an officer, named

Jean de Cordonne, having opened the vizor of his helmet to take breath, this man struck him in the unguarded part with his arrow and killed him." Finally, in the year 1627, at the siege of La Rochelle, there were some English cross-bowmen in the pay of Richelieu who distinguished themselves at the attack on the island of Ré.

As a missile-weapon the cross-bow was admirable, alike for the accuracy of its aim and for the power of sending its projectiles. Its only disadvantage was its weight and the length of time required to string the bow. For, in the fourteenth century, when it had reached a high state of perfection, a skillful cross-bowman could only shoot about two arrows a minute; while an archer could send a dozen, as he had only to stoop and pick one up from the bundle which he had placed under his foot, without taking his eye from his enemy.

Grose cites Sir John Smith as saying, in his *Instructions and Observations*, that the cross-bow would kill point-blank between forty and sixty yards, and if elevated, seven or eight-score yards, or further. The long bow, however, in the hands of a powerful archer would carry upwards of 250 yards. William de Bellay,* in his *Instructions for the Wars*, written in the year 1589, gives the cross-bow a still greater range. He says: "And were it so, that the archers and cross-bowmen could carry about with them their provision for their bows and cross-bows as easily as the harquebusiers may do theirs for the harquebusse, I would recommend them before the harquebusse, as well for their readiness in shootinge, which is much more quicker, as also for the sureness of their shot, which is almost never in vayne. And although the harquebusier may shoote further, notwithstanding, the archer and cross-bowman will kill at one hundred or two hundred paces off as well as the best harquebusier. And sometimes the harnesse, except it be the better, cannot holde out. At the uttermost the remedy is that they should be brought as neare before they do shoote as possibly they may, and if it were so handled, there would be more slain by their shot than by twice as many harquebusiers. And this I will prove by one cross-bowman who was at Thurin when the Lord Marshal of Annehault was governor there, who, as I have understood, in five or six skirmishes did kill or hurt more of our enemies than five or

*Grose's *Military Antiquities*, Vol. II, note at foot of page 289.

six of the best harquebusiers did during the whole time of the siege."

In case of rain, the cord of the long bow could easily be detached and put away; while that of the cross-bow, on the contrary, was usually fixed in such a way as to remain permanently, until worn out or removed to be repaired. The rain having wet the cords of the cross-bows at the battle of Cressy (1346) had an important influence on the result of the battle. The French employed fifteen thousand Genoese cross-bowmen in their army; but the day before the battle, Froissart tells us, they were quite fatigued, having marched on foot six leagues completely armed and with their cross-bows. The Genoese were ordered to the front to begin the fray; but a heavy rain, which had fallen before the commencement of the action, had wet the cords and rendered them useless. The English archers, who, during the shower, had put their bows into their cases, withdrew them uninjured, and, taking advantage of this, shot their arrows with such force and effect that it seemed as if it snowed. "When the Genoese felt these arrows, which pierced their arms, head, and even their armor, some of them cut the strings of their bows, while others flung them on the ground, and all turned about and retreated quite discomfited. The French had a large body of men-at-arms on horseback rightly dressed to support the Genoese; but the King of France, seeing them in this disorganized condition, cried out: 'Kill me those scoundrels, for they stop up our road without any reason.' You would then have seen the above-mentioned men-at-arms lay about them, killing all they could of these runaways."

The Genoese, who were always celebrated for their skill in the use of this weapon, do not seem to have lost their prestige by reason of their ill success in this battle; for we find Charles, Earl of Blois, the next year, employed two thousand of them at the siege of La Roche de Rien; and in the *Chronicle of Bertrand de Guesclin* we read: "Seventeen thousand were armed, without reckoning the cross-bowmen, who were Genoese." And again, at the siege of Brest, Froissart tells us that "the Genoese, who were at the edge of the town ditch, and kept up a steady discharge of their arbalests, harried those of the town to such a degree that they durst not show their heads above the battlements; for the Genoese cross-bowmen are such expert marksmen that whenever they aim they are sure to hit."

At the commencement of the fifteenth century all the cross-bows then in use had their strings drawn by means of machinery; and of these there were three distinct varieties: the *arbalète à pied-de-biche*, or hind's foot; the *arbalète à tour*, or rolling-purchase cross-bow, sometimes called the *arcubalista grossa ad stapiam*, or great stirrup cross-bow; and the *arbalète à cry*, or *à cric*, or, in English, latch cross-bow. Although some sort of mechanism was used before this time for stringing the bow, we have no reliable information on the process employed for doing so. The manner of bending the bow by means of the foot is very old, authority being found for it by Guillaume le Breton, who wrote in the twelfth century; and the manuscript illustrations of the thirteenth and fourteenth centuries show cross-bows furnished with a stirrup and a hook fastened to the belt by a strong leather strap, which enabled the cross-bowman, by lodging the cord of the bow in the hook and leaning his weight upon his foot in the stirrup, to draw the cord slowly to the nut. But I do not think that the hind's foot cross-bow, the first of the three above named, was in use before the commencement of the fifteenth century; at least, we do not, before that epoch, find any other method of stringing the bow than the one just described. The *arbalète à tours*, or rolling-purchase cross-bow, is seen in paintings about the year 1425; and the *cric*, or latch cross-bow, the last fitted with a mechanism, and also the most powerful, made its appearance about the beginning of the sixteenth century.

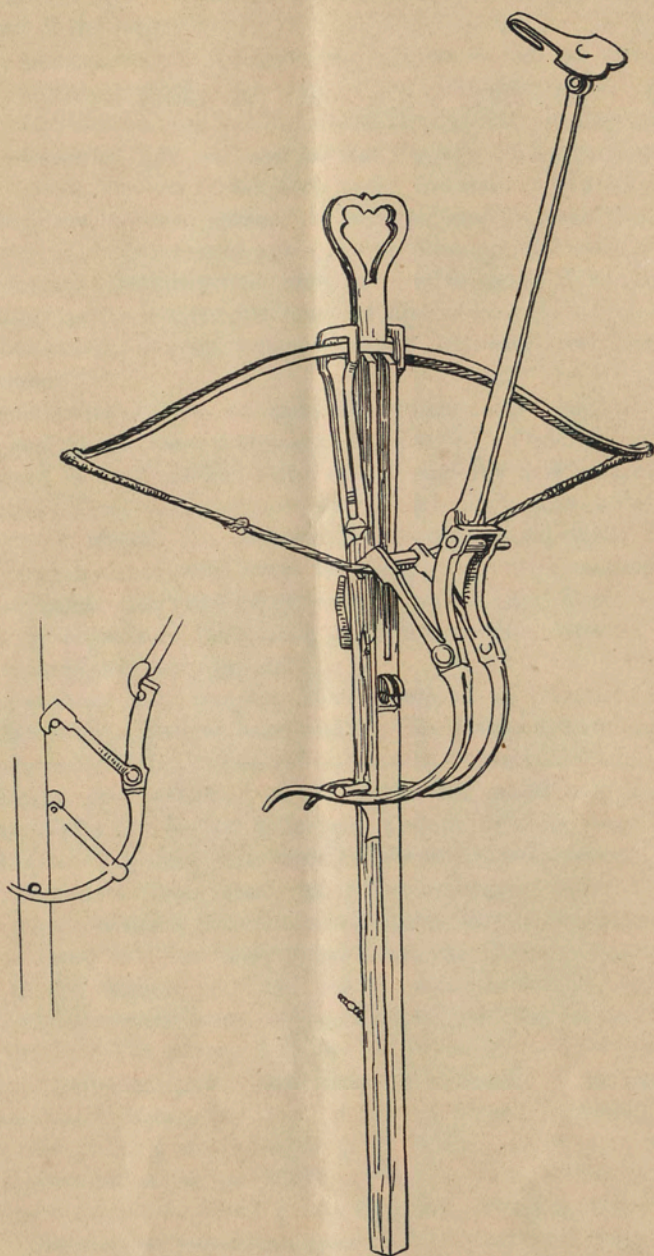
The *arbalète à pied-de-biche*, or hind's foot cross-bow, was lighter than the others, and usually carried by horsemen at the saddle-bow. By means of a small stirrup at the extremity of the stock it hung suspended from a hook in the saddle. A short distance below the bow, a hook was fixed in such a manner as to attach itself to the saddle and prevent the bow from shaking and tossing about. The machinery used to bend this cross-bow is a lever, composed of two pieces. One of these pieces, the arm of the lever, is divided into two branches, each provided with a sort of fork. In bending the bow, one of these forks grasps the cord, and the other branch, by means of its long fork, rests on projecting pieces of iron on each side of the stock. The cross-bowman, seizing the lever, draws it towards him, and the fork with the cord in its grasp, following this movement, is brought into the notch, where it is held, and the bow is strung. The

apparatus is then removed, and attached to the belt by a hook at the end of the lever.

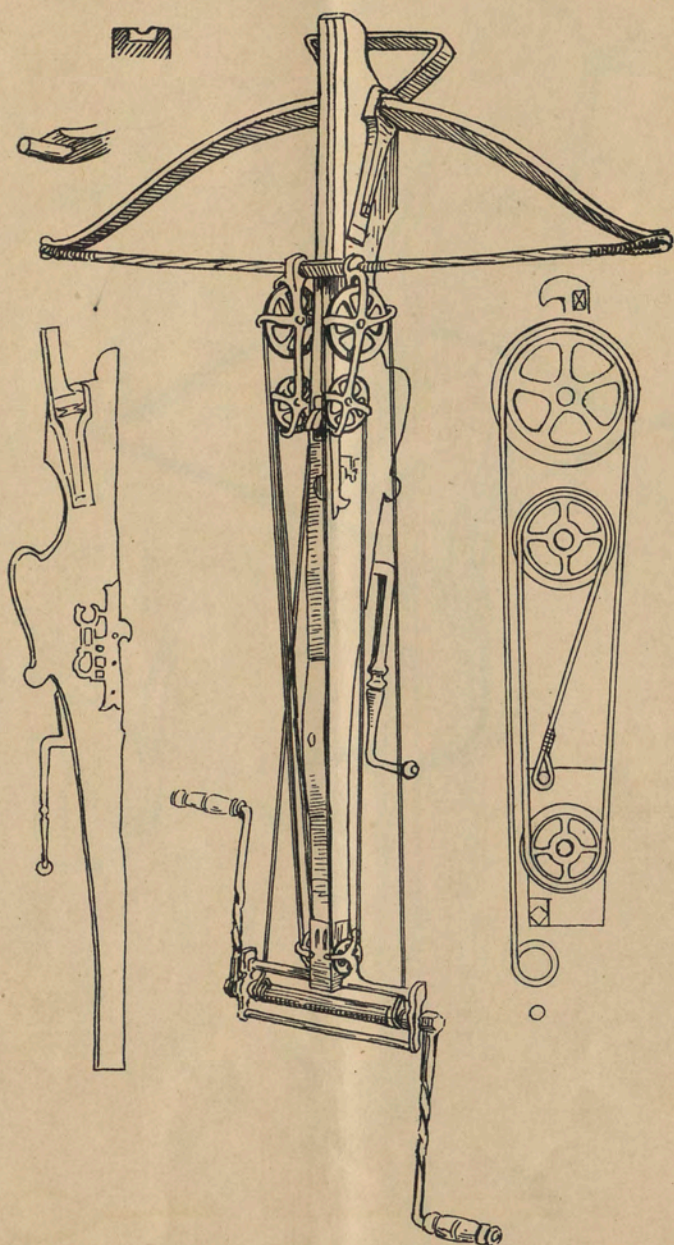
The mechanism for stringing the bow was much quicker, and was less complicated, than that of the rolling-purchase cross-bow; but the bow was not so powerful, and had shorter range. This arm being light, in order to aim properly, it was not necessary to place the butt of the stock under the arm, or to steady the elbow of the left arm against the side, as was the case with the larger bow. With the larger weapon, however, the butt of the stock being placed under the arm, in order to steady it, the cross-bowman had to incline his head to aim accurately. The foot cross-bowmen acquired, however, great skill, and rarely missed their man.

The *arbalète à tours*, or rolling-purchase cross-bow, was too large and cumbersome a weapon to be carried on horseback, and was used by foot soldiers only; and during the first part of the fifteenth century was employed for the defence and in the attack of fortified places. In Germany, such cross-bows were made very large and powerful, often measuring twenty or twenty-five feet in length, and were called *rebaudequins*. They threw a bolt seven or eight feet long, and, besides, propelled stones, clay bullets and incendiary projectiles.

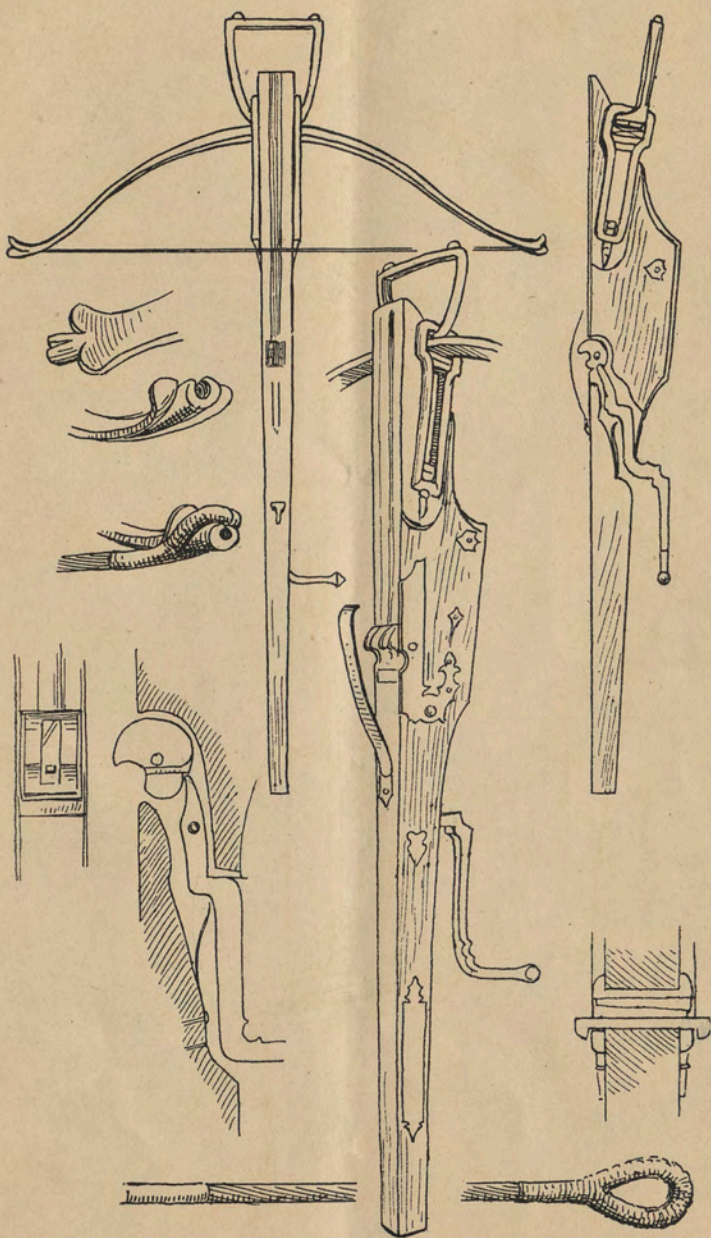
These formidable weapons were mounted on trunnions, and required several men to handle them, much after the manner of our modern artillery. The rolling-purchase cross-bow was long and heavy, and furnished at the end of the stock with a steel stirrup. The one in my collection is made of some very hard wood, stained a dark color and rudely inlaid with ivory. The stock measures three feet three inches in length, and the steel bow, which is fitted into the stock about four inches from the end, is about two feet four inches from end to end, two inches wide in the deepest part and nearly three-quarters of an inch thick, and the ends were so forged as to hold the loops of the cord firmly. The stirrup is six inches in length, and five inches wide at the widest part of the span. The length of the groove for the quarrel is one foot three and a half inches, including that of the nut, which is about half an inch wide. The nut is of horn, with a pivot and a steel pin to receive the extremity of the trigger, and when the bolt was shot it was reversed, having turned on its axis. The jar or concussion produced on the cord, when released from the butt in firing, was so great that it became neces-



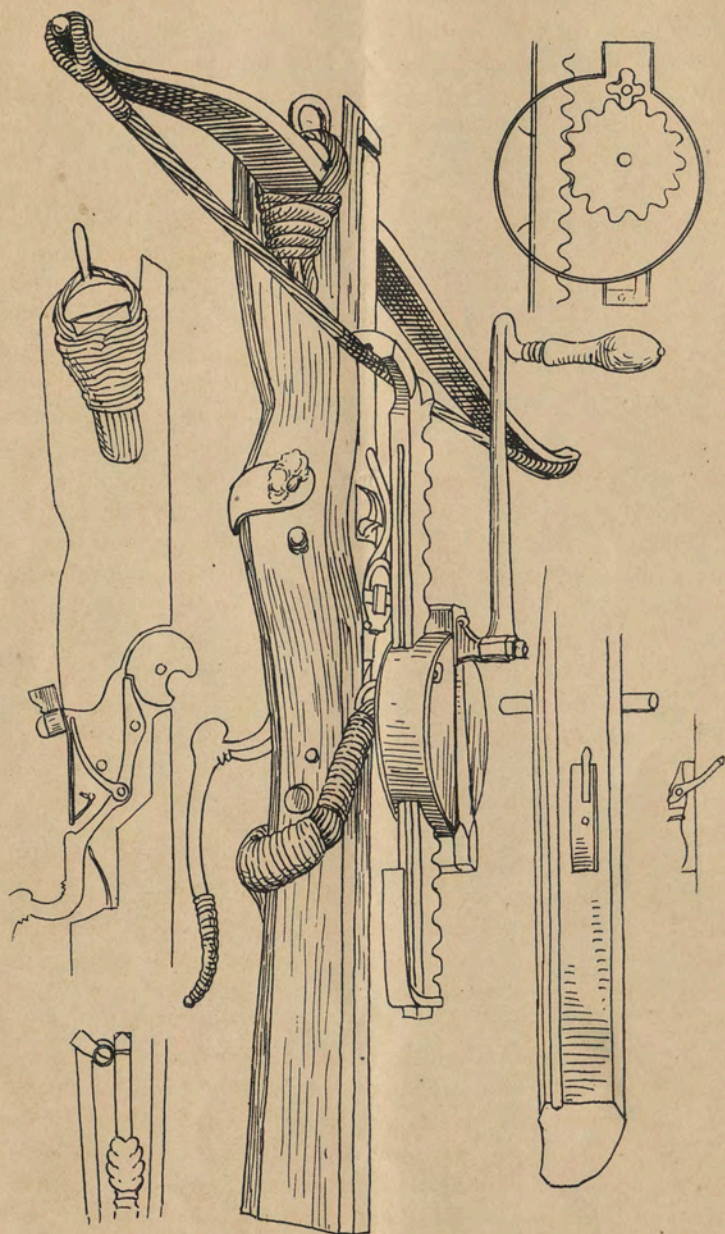
Arbalète Pied-de-biche. Author's collection.



Arbalète à tours. Author's collection.



Arbalète à tours.



Arbalète à cric. *Auslens collection*

sary to fasten the bow firmly in the stock by means of two steel clamps or *renforts*; and it was frequently further protected by thick bands of rope bound over it, the wear and tear of this part of the arm being exceedingly severe. The cord itself was very thick, made usually of hemp, strongly bound round (but not twisted) at the middle and two ends.

In order to draw the cord to the nut, this cross-bow was furnished with what was called the *tour moufle*, or *moulinet*, which, after the bow had been strung, could be removed and hung at the belt, having a hook for that purpose. The *moulinet* consisted of an iron cylinder in a frame, likewise of iron, made to turn by means of two handles in opposite directions, and having a cap, also of iron, to fit on the butt end of the stock. On each side of the cap is a small pulley, the wheel of which has attached to one of its arms a cord, which passes around another wheel of equal size, returns over the first, and then goes round another wheel of double the diameter, and so passes to the cylinder of the *moulinet*; by winding which the power necessary to bend the bow is lessened to a fourth. Attached to the arms of the wheels is a claw made to slide on the plane of the stock, to catch hold of the cord and draw it to the nut.

In order to string the bow, it was necessary to place the end of the foot in the stirrup. The groove, which is of ivory, and in which the bolt rested, is slightly concave, so as to reduce the friction of the bolt on the stock. On account of the weight of this weapon, the cross-bowman, when he wished to fire, was obliged to lean the elbow of his left arm on his left side, and in that position could hold the bow firmly for several seconds.

At the commencement of the fifteenth century, we find the large pavise (or *pavois*, in French), also called mantelet, a shield so large as to be a sort of portable intrenchment, introduced for the purpose of protecting the cross-bowman from the missiles of the enemy while bending his bow. This shield was usually three feet six inches in length, and from twenty-two to twenty-four inches in width, almost entirely covering the body of the bowman. It was square in outline and convex in form, in order that missiles striking it should glide off; and also to leave a space for passing the arm when it was to be carried, or to plant it on the ground by means of a stake. The pavise was made of strips of light wood very skilfully glued together, and covered inside and out with the skin of the deer, and sometimes

of the horse, or ass, and pasted with great care on the wood, which was painted or varnished over. According to Sir Samuel Rush Meyrick,* these large shields were sometimes called paniers, on account of their construction, which he describes as

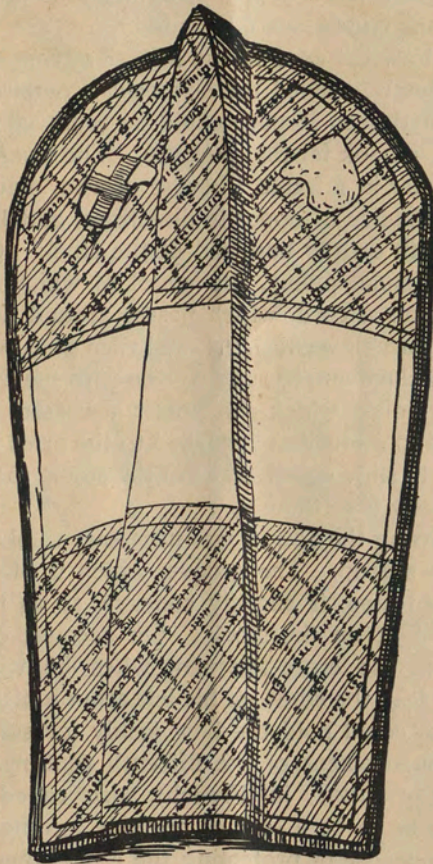
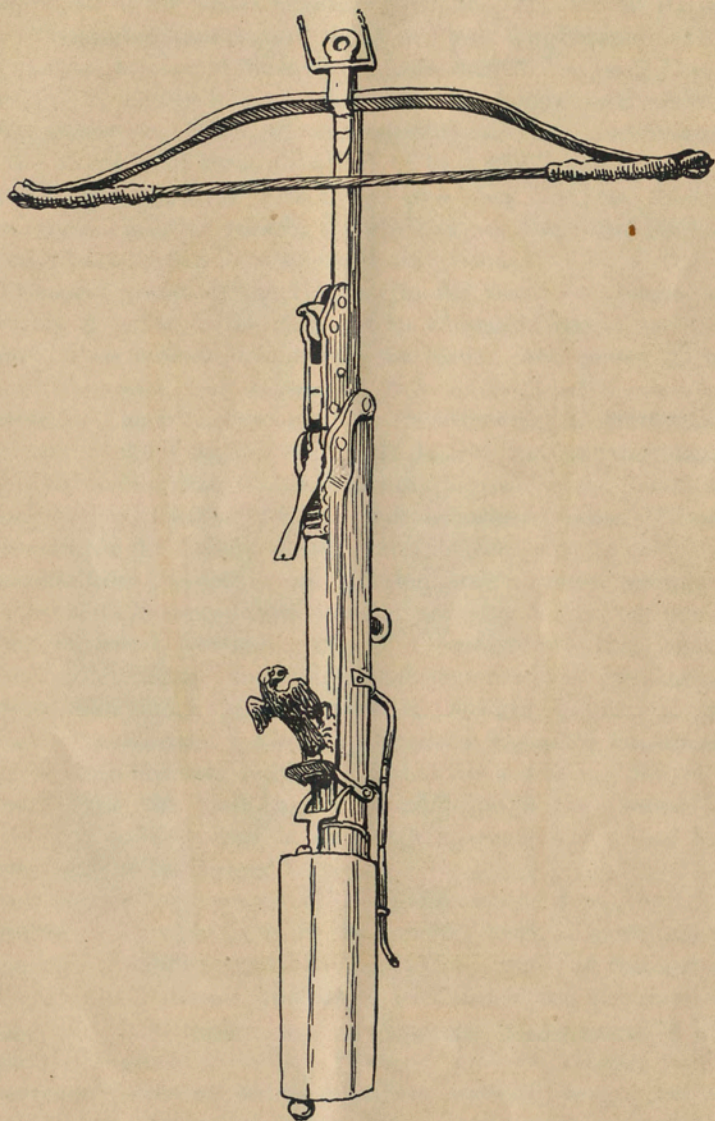


Fig. 1.—Pavise. Author's collection.

follows: "The interior was formed of osiers, over which was placed a cover of aspen wood, or black poplar, the wood of which is white and very light. Sometimes, indeed, this exterior surface was wanting, and then the osiers were more closely interwoven."

* Meyrick's *Critical Inquiry into Armour*, Vol. II, page 130.



Arbalèt à jalet. Author's collection.

The shields were frequently charged with the armorial bearings of the great lord under whose banner the cross-bowman was enlisted, or of the vassal who carried them. Mr. W. H. Riggs, the Washington banker, now living in Paris, a celebrated collector of arms, has one of these rare shields; and M. Viollet-le-Duc,* speaking of it, says it is about three feet in height, and has two straps at the upper part, to suspend it on the back, and another at the lower part, through which to pass the arm. It is emblazoned with the arms of the owner on a black field: two shields, one *argent à la croix gueules*, the other *argent à la bande gueules*, accompanied by two lions rampant of the same.

Froissart speaks of the Genoese in the service of France as carrying a pavise in the shape of an elongated heart; and this form is also frequently found on the Italian monuments of the fifteenth century. Sir Samuel Meyrick thinks these shields were carried by a man who preceded the cross-bowman to defend him while he plied his shafts. M. Viollet-le-Duc, on the other hand, is of the opinion that it was habitually carried on the back, enabling him to mount with it in assaulting fortified places. It was also used for the defence of walls, and for carrying the dead and wounded from the field, a usage dating from a remote antiquity. Guillaume le Breton, in describing the siege of Roche au Moine, in the thirteenth century, speaks of a shield then in use, which he calls the "Parma," and which must have been almost identical in form with the pavise. He says the besieged, in order to get rid of a troublesome pavisor, hit upon an ingenious expedient. One of their bowmen sent forth a shaft to which was affixed a slender cord: the barb having buried itself in the Parma, he pulled the cord, overset it, and with a second shaft slew the enemy, now fully exposed to view.

Let us now turn our attention to the *arbalète à cric*, or latch cross-bow. This bow, during the hundred years or more that it was used, does not seem to have varied materially in form, and, although much shorter, and with a mechanism less complicated than either of the former, was more powerful, on account of the greater strength of the bow. The stock is short; the one in my possession measuring but twenty-three inches in length, and is three inches thick in its widest part. The bow is not held in place by clamps, as in the case of the rolling-purchase cross-bow,

* *Dictionnaire Raisonné du Mobilier Français*, Vol. VI, page 217.

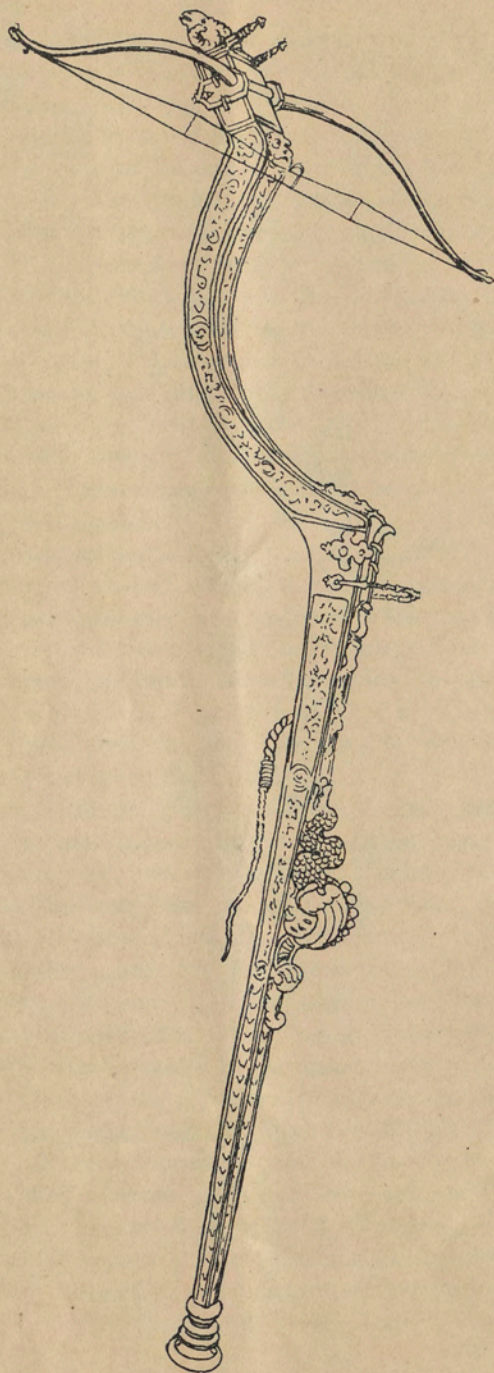
but by an ingenious system of stout cords wound round the bow and run through a hole about four inches and a half from the end of the stock.

The bow is bent by a windlass, which consists of an iron rod with a double claw at its end and having a row of teeth the entire length of one side. The rod passed through an iron box, which contained a cog-wheel made to fit the teeth of the rod; and a handle being fixed to the axle, on turning it, the rod was advanced, until the claws grasped the bowstring; then, by reversing the action of the wheel, the rod was drawn back, and the cord followed it, until it was caught in the nut, and it was wound up. This apparatus was attached to the stock by a loop made of strong cords, which slipped over the butt of the stock, and was held in its place by two iron pins, which projected from each side; and then, when the bow was bent, it could be easily removed and hung at the belt by a hook.

This arm was carried on the back of the cross-bowman, and was held there by a strap, which passed through a leather loop, and from thence through a ring fastened at the upper end of the stock. The bolt was not placed in a groove, as in the case of the other cross-bows, but simply on a flat surface on the face of the stock, which was of ivory, and held in place by a light spring of horn that passed over the nut. The range of this bow is about three hundred feet when held horizontally.

In addition to these three cross-bows, I may briefly mention two others that were in use in the sixteenth and seventeenth centuries, but were only used in the chase: the *arbalète à jalet* (because the missiles used were stones, or lead balls) or prod; and the *arbalète à baguette*, or barrelled cross-bow.

The first-named came into use about the middle of the sixteenth century, and was very light and graceful in form. The stock, at about the distance of two feet six inches from the butt, takes a curve equal in chord to the space required to string the bow, which rendered it easy to carry on the shoulder, as well as prevented any interruption to the projectile force of the bullet by friction. At the commencement of this curve is placed a small lever, which forms a hook at one end, and turns in a movable axis. The hook is to hold the string, which, when the lever is pushed down, is held by means of a trigger, this being furnished with a hook to catch into a hole in the lever. The cord is very different from the others, being double, and the



Arbalète Catherine de Médicis. ~~Author's collection.~~

Myrick collection

two parts separated by two small cylinders of wood equidistant from the extremities and centre. These bows were often highly ornamented, and were either elaborately carved or inlaid with precious metals.

Probably the finest example existing is that of Catherine de Médicis which is preserved in the *Musée des Souverains*, form-

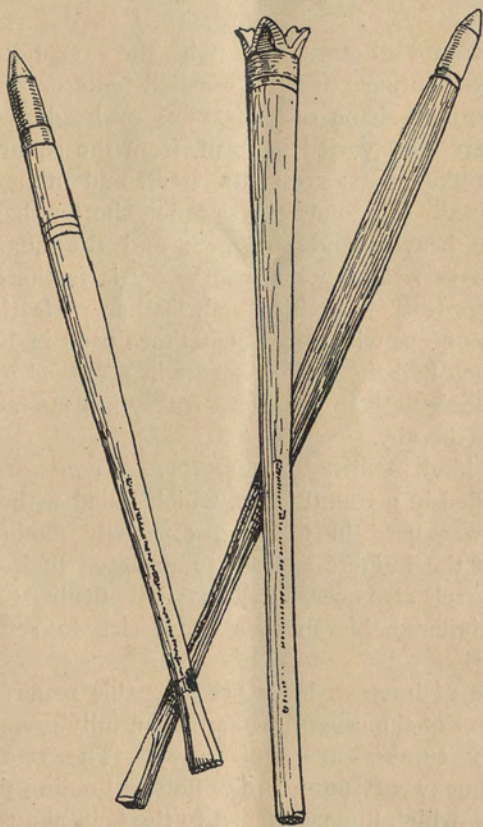


Fig. 2.—Cross-bow bolts. Author's collection.

erly in the *Bibliothèque Impériale*, Paris. It is of Italian workmanship of the best period, and the wood is yew exquisitely carved and inlaid with silver, chiseled and damascened with

remarkable taste and execution. In the use of the prod Queen Elizabeth is said to have been a proficient.

The *arbalète à baguette* was an arm in use in the reign of Louis XIV, and is heavy without much strength. It is strung by means of a stick or sort of ramrod, or simply with the hand, and the groove through which the quarrel slips is covered by a half tube, leaving a passage for the string. This tube gives the stock the appearance of a gun. The projectile could either be a bolt or a bullet.

The missiles for all cross-bows (with the exception of the pebble or bullet-shooting ones) were called bolts or quarrels, from the quadrangular shape of their piles or heads. These piles or heads were very varied in form, from the square tip to the sharp, lance-like point; crescents, stars, and other odd shapes being also used. The quarrel was much shorter than the arrow, and its pile heavier and stronger; and the quarrel is only feathered on two sides, while the arrow is feathered on three. The shaft was feathered with wood, leather, or feathers, and set on straight; except with those sometimes used in France called *viretons*, which had the feathering set in a curved manner so as to regulate their flight by giving a rotary movement when passing through the air.

Another kind, called *matras* (or, *carreau assommeur*, in French), ended in a round knob, which killed without shedding blood. It was used in hunting, especially against feathered game, when the hunters desired to preserve their spoils uninjured. Quarrels also occasionally carried burning tow and tubes filled with inflammable material, in order to set fire to the enemy's works.

It may be of interest, before closing this paper, to speak of the equipment of the cross-bowman when fully prepared for war. It was very cumbersome and heavy. The cross-bow itself weighed about twenty pounds; the quiver, holding usually about twenty bolts, which hung attached to the belt, about four or five pounds more; while on his back he frequently carried the large pavise to protect him while he strung his bow; and at his side he carried a long sword. For headgear he wore a *chapel de fer*, or rounded helmet, but without vizor or protection for the face; and a *camail de mailles*, or collar of chain-mail, which covered the neck and a portion of the chest and shoulders. As body-armor he wore a brigantine, or sort of jacket, in the form of a

doublet, the inside of which was of strong linen, or skin, and the outside of velvet, or cloth; while between these two layers of stuff were plates of steel, overlapping each other like the slats of a blind, and fastened to the outside covering by rivets, the



Fig. 3.—Cross-bowman Fully Equipped.

heads of which formed an ornament on the outside of the velvet. Under this garment he wore a hauberk, or coat of mail. *Chausses*, or leg coverings, also of linen or silk, and *genouillères*, or knee guards, protected his legs, and completed his equip-

ment, which could not have weighed less than seventy or eighty pounds. It will be readily seen, therefore, that his proper employment was in the defence or attack of fortified places. Behind a parapet or mantelet the cross-bowman could be used to the best advantage; for, firing slowly, he should be under cover.

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